

Appl. No. 10/767,877
Prelim. Amdt. dated October 14, 2004

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

- 1) (currently amended) An apparatus for filtering fluids comprising:
 - an outer fluid container;
 - a fluid inlet into the outer fluid container providing fluid into the outer fluid container;
 - a compressible filter media bed within a filter media housing supported in the outer fluid container, wherein at least a portion of the housing is flexible and contains ~~compressible~~ a loose pile of pliant filter media;
 - an opening in the housing for receiving fluid entering the outer fluid container;
 - and
 - a filtered fluid outlet for filtered effluent to exit the housing.
- 2) (currently amended) The apparatus of claim 1 wherein the flexible portion of the housing includes a flexible membrane supported upright in the outer fluid container ~~for fluid to surround the housing and compress the compressible filter media with the~~ opening at the top of the housing and the filter media bed supported for top to down filtration.
- 3) (currently amended) The apparatus of claim ~~[[2]]~~ 1 wherein the opening in the housing ~~includes an upper perforated plate attached to the top of the housing~~ communicates with an interior portion of the outer container to receive fluid to be filtered from the interior portion.

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- 4) (currently amended) The apparatus of claim 3 wherein the opening is a perforated upper plate that receives fluid rising within the interior portion of the outer fluid container above the housing and upper plate.
- 5) (original) The apparatus of claim 4 further comprising a lower perforated plate attached to the housing beneath the filter media bed.
- 6) (currently amended) The apparatus of claim 1 ~~further comprising a closeable drain in the outer fluid container for controlling filling of the outer fluid container with fluid~~ wherein the pliant filter media includes a plurality of detached fibrous bundles.
- 7) (original) The apparatus of claim 2 further comprising an overflow outlet in the outer fluid container above the housing for excess flow to exit the outer fluid container.
- 8) (currently amended) The apparatus of claim 2 wherein the filter media bed is fluidized and includes particulates and further comprising a filter media agitator provided to the housing ~~[[for]] that disturbs[[ing]]~~ the filter media bed and expands~~[[ing]]~~ the housing to wash at least some of the particulates out of the filter media bed and housing.
- 9) (currently amended) The apparatus of claim 8 wherein the agitator is an air blower ~~[[for]] positioned to circulate~~ing the filter media with air elevating fluid and expelling at least some of the particulates from the opening in the housing.
- 10) (currently amended) The apparatus of claim 9 ~~further comprising:~~ wherein the opening includes an upper perforated plate attached to the top of the housing[[:]] and further comprising a lower perforated plate attached to the filter media housing beneath the filter media bed and above an outlet from the air blower.

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- 11) (original) The apparatus of claim 10 further comprising a backwash outlet in the outer fluid container for carrying out particulate wash fluid from the outer fluid container.
- 12) (currently amended) The apparatus of claim ~~[[11]]~~ 9 wherein the opening includes an upper perforated plate attached to the top of the housing and further comprising one or more backwash removal troughs ~~[[on]]~~ adjacent to the upper perforated plate for directing particulate wash fluid from the plate and away from reentering the housing.
- 13) (original) The apparatus of claim 1 wherein the compressible filter media includes at least one bundle of fibers including a fiber with at least two different component materials.
- 14) (original) The apparatus of claim 13 wherein the at least two different component materials include a polyester inner core and polypropylene sheath.
- 15) (original) The apparatus of claim 13 wherein the at least two component materials include a nylon inner core and a polypropylene sheath.
- 16) (original) The apparatus of claim 13 wherein the at least two different component materials are each selected from the group consisting of polyester, copolyester, polyactic acid, polytrimethylene terephthalate, polycyclohexanediol, terephthalate, polyethylene naphthalate, high density polyethylene, linear low density polyethylene, polyethylene, polypropylene, nylon, polyvinylidene fluoride, polytetrafluoroethylene and polyurethane.

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- 17) (original) The apparatus of claim 2 wherein the compressible filter media includes at least one bundle of fibers including a fiber with at least two different component materials.
- 18) (original) The apparatus of claim 17 wherein the at least two different component materials are each selected from the group consisting of polyester, copolyester, polyactic acid, polytrimethylene terephthalate, polycyclohexanediol, terephthalate, polyethylene naphthalate, high density polyethylene, linear low density polyethylene, polyethylene, polypropylene, nylon, polyvinylidene fluoride, polytetrafluoroethylene and polyurethane.
- 19) (original) The apparatus of claim 2 wherein the housing includes an upper portion wider than a lower portion of the housing.
- 20) (currently amended) The apparatus of claim 2 wherein the compressible filter media is positioned to be compressed in a direction generally perpendicular to the direction of fluid flow through the housing when external pressure against the housing exceeds the hydrostatic pressure of fluid being filtered within the filter media bed.
- 21) (currently amended) The apparatus of claim [[1]] 6 wherein the filter media is positioned to be compressed in a direction non-parallel to the direction of fluid flow through the housing when external pressure against the housing exceeds the hydrostatic pressure of fluid being filtered.
- 22) (currently amended) The apparatus of claim 21 wherein the filter media bed includes at least two distinct compression zones.
- 23) (original) The apparatus of claim 22 wherein at least one of the compression zones includes filter media uncompressed by the housing.

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24) (currently amended) A filter apparatus comprising:

an outer container;

a filter media housing containing filter media within the outer container;

fluid within the outer container and surrounding the filter media housing, wherein

the fluid compresses at least a portion of the housing and filter media within

the at least a portion of the housing;

an unfiltered fluid opening into the flexible housing for allowing the fluid to be

filtered into the housing; and

a filtered fluid outlet for filtered fluid to exit the housing.

25) (currently amended) The filter apparatus of claim 24 further comprising:

a filter media agitator for backwashing the filter media; and

means for expelling and directing elevated backwashed fluid from reentering the housing.

26) (original) A method for filtering fluid comprising:

providing fluid to be filtered against a flexible housing, wherein the flexible

housing houses compressible filter media;

compressing the flexible housing with the fluid to compress the filter media; and

filtering the fluid through the filter media.

27) (currently amended) The method of claim 26 further comprising:

agitating the filter media to dislodge solids adhering to the media filtering ~~[[of]]~~ the

fluid; and

removing effluent containing solids dislodged during the agitating of the filter

media by guiding expelled backwash fluid away from reentering the housing.

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28) (currently amended) A fluid filtering apparatus comprising:

an outer container;

a fluid inlet into the outer container for providing fluid into the outer container;

an inwardly flexible housing ~~containing filter media~~ supported within the outer container, wherein the inwardly flexible housing includes an opening for receiving fluid entering the outer container; and

a compressible filter media bed contained within the housing including a plurality of detached, pliant fibrous bundles; and

a filtered fluid outlet for filtered fluid to exit the flexible housing, wherein the flexible housing includes at least two different width[[s]] zones between the opening and the outlet that provide at least two distinct compression zones in the filter media bed.

29) (original) The apparatus of claim 28 wherein the housing includes a first width near the opening that is wider than a second width near the outlet.

30) (currently amended) The apparatus of claim 29 wherein the outer container includes fluid exerting pressure against the entire housing and at least one distinct compression zone includes filter media uncompressed by the housing is substantially tapered.

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31) (currently amended) An apparatus for filtering fluids comprising:

an outer container;

compressible filter media including pliant, detached filter elements housed within the outer container in at least a portion of a housing that is pliable and inwardly compressible;

an inlet for receiving a flow of fluid to be filtered into the housing;

fluid within the outer container and surrounding the housing, wherein the fluid compresses the at least a portion of a housing that is pliable and the compressible filter media in a non-parallel direction to the direction of fluid flow through the housing by decreasing the volume of the filter media; and

an outlet for filtered fluid to exit the housing.

32) (currently amended) A method for filtering fluid comprising:

receiving fluid to be filtered in a housing, wherein at least a portion of the housing is inwardly compressible and said inwardly compressible portion contains compressible filter media including pliant, detached filter elements;

compressing the housing in a direction non-parallel to the direction of fluid flow through the filter media and decreasing the volume of the filter media; and

filtering fluid through the filter media.

33) (original) The method of claim 32 wherein the housing includes a flexible membrane.

34) (original) The method of claim 32 wherein the filter media is included in a bed of filter media, the bed including at least two different compression zones.

35) (currently amended) The method of claim 34 wherein at least one compression zone is uncompressed by the housing.

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36) (original) The method of claim 32 wherein the fluid flow is in a top to down direction.

37) (currently amended) An apparatus for filtering fluids comprising:

an inlet for delivering fluid to be filtered to a filter media bed, wherein at least a portion of the bed is compressible and includes pliant, detached filter media;

a housing containing the portion of the bed that is compressible in at least a flexible portion of the housing; and

an outlet for conveying filtered fluid from the filter media.

38) (original) The apparatus of claim 37 further comprising:

a covering over the housing; and

a spacing gap provided in the housing between the covering and surface of the filter media bed initially contacting the fluid to be filtered.

39) (original) The apparatus of claim 37 wherein the filter media bed includes at least one filter bed portion uncompressed by the flexible portion of the housing.

40) (original) The apparatus of claim 37 wherein the filter media bed includes two or more distinct compression zones.

41) (original) The apparatus of claim 40 wherein at least one of the compression zones is uncompressed by the flexible portion of the housing.

42) (original) The apparatus of claim 37 wherein the filter media bed is positioned for fluid to be filtered to flow through the filter media bed in a direction non-parallel to the direction of the compression of the compressible portion of the filter media bed.

43) (currently amended) The apparatus of claim 42 ~~wherein the housing is a flexible membrane~~ further comprising:

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an air blower positioned to circulate the filter media during a backwash cycle with
air elevating backwash fluid and expelling at least some particulates from
the housing; and
guides for receiving and directing expelled particulates away from reentering the
housing during the backwash cycle.

44) (currently amended) The apparatus of claim 38 ~~wherein the housing is a flexible~~
~~membrane~~ further comprising:

an air blower positioned to circulate the filter media during a backwash cycle
with air elevating backwash fluid and expelling at least some particulates
from the housing; and
guides for receiving and directing expelled particulates away from reentering the
housing during the backwash cycle.

45) (currently amended) A method for filtering fluid comprising:

receiving fluid to be filtered in a housing, wherein the housing contains
compressible filter media detached from any surrounding portion of the
housing;

compressing at least a portion of the filter media in a direction non-parallel to the
direction of the flow of fluid to be filtered through the filter media by
overcoming hydrostatic pressure of the fluid to be filtered deforming the
filter media; and

filtering the fluid through the media.

46) (currently amended) The method of claim 45 ~~wherein the least a portion of the filter~~
~~media is compressed by at least a portion of the housing~~ further comprising:

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ceasing the filtering of fluid through the media;

fluidizing the filter media with backwash fluid;

agitating the backwash fluid so that at least a level of the backwash fluid is
elevated out of the housing; and

directing elevated backwash fluid expelled with at least some particulates away
from reentering the housing.

- 47) (currently amended) The method of claim 46 wherein elevated backwash fluid is expelled through an upper perforated plate in the housing that includes troughs adjacent to the plate that direct elevated backwash fluid from reentering the housing through the plate, the at least a portion of the filter media is compressed in a direction generally perpendicular to the flow of fluid through the housing.
- 48) (currently amended) A method for filtering fluid comprising:
- receiving fluid to be filtered in a housing, wherein the housing contains compressible filter media detached from any surrounding portion of the housing;
- compressing and reducing the volume of at least a portion of the filter media to create two or more distinct compression zones; and
- filtering the fluid through the media.
- 49) (original) The method of claim 48 wherein the least a portion of the filter media is compressed by at least a portion of the housing.
- 50) (currently amended) The method of claim 49 wherein the at least a portion of the filter media is compressed by the fluid to filtered exerting pressure inwardly from

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outside the housing. in a direction generally perpendicular to the flow of fluid through
the housing.